CLAIMS

We claim:

1. A method for utilizing vaporizable liquid fuels, residues and waste by gasification of said fuels, residues and waste to recover in a post gasification processing, useful products from a gasified form of the fuels, residues and waste, comprising:

heating the fuels, residues and waste to completely vaporize said fuels, residues and waste to a vapor form ; and

reacting a feed of the vapor form of said fuels, residues and waste with a gasifying medium containing free oxygen in a gasification reaction zone at a temperature of at least about 900° C. to provide the gasified form of said fuels, residues and waste.

2. The method as claimed in claim 1 in which the fuels, residues and waste are reacted at a temperature in a range of about 1100° C. to about 1600° C.

3. The method as claimed in claim 1, in which the fuels, residues and waste are vaporized by directly contacting the fuels, residues and waste with a heated fluid, the heated fluid delivering the fuels, residues and waste to the gasification reaction.

4. The method as claimed in claim 3, in which the heated fluid is steam.

5. The method as claimed in claim 1, in which the fuels, residues and waste are vaporized in an indirect heat exchange operation with a heating medium and fed in gaseous form to the reaction zone.

6. The method as claimed in claim 1, in which the fuels, residues and waste are vaporized by passing a feed of the fuels, residues and wastes in company with a feed of steam through a venturi tube.

7. The method as claimed 6, in which the fuels, residues and waste are introduced into the venturi tube at a location upstream of a location of a narrowest cross section of the venturi tube, the steam being introduced upstream of said location of fuels, residues and wastes introduction.

8. The method as claimed in claim 1, in which steam is added to the gasifying medium.

9. Apparatus for gasifying liquid fuels, residues and waste, comprising;

a gasification reactor, the gasification reactor including a gasification burner;

a prevaporization chamber upstream of the gasification reactor;

means for supplying a feed of the fuels, residues and waste into said prevaporization chamber;

means for supplying a feed of steam into said prevaporization chamber for completely vaporizing the liquid fuels, residues and waste to vapor form, said prevaporization chamber communicating with said gasification reactor so that the vapor form fuels, residues and waste, and the steam pass into the gasification reactor; and

means for supplying a gasifying medium to said gasification reactor, the vapor form fuels, residues and wastes reacting with the gasifying medium in the gasification reactor to provide a gasified form of said fuels, residues and waste.

10. The apparatus as claimed in claim 9, in which the gasification burner includes an annular passage and a burner mouth at which said annular passage outlets, the vapor form fuels, residues and waste passing from the prevaporization chamber through said annular passage for outletting at said burner mouth at which the gasification reaction occurs; and

a central tube in which the gasifying medium flows to the burner mouth.

11. The apparatus as claimed in claim 9, comprising

a vessel, the prevaporization chamber and the gasification reactor being arranged in succession in-line in the vessel; and

a common feed tube extending from an end of the vessel, the feed tube communicating with the prevaporization chamber, the feed of fuels, residues and waste, and the feed of steam being delivered to said prevaporization chamber through said common feed tube, the means for

supplying gassifying medium being at least one pipe extending through the shell into the gasification reactor.

12. The apparatus as claimed in claim 9, in which the pevaporization chamber comprises a venturi tube, the means for supplying the feed of fuels, residues and waste being connected to the venturi tube upstream of a narrowest cross-section of said venturi tube, the means for supplying a feed of steam being connected to the venturi upstream of the connection of the means for supplying fuels, residues and waste.

13. Apparatus for gasifying liquid fuels, residues and waste, comprising:

a gasification reactor;

a gasification burner in the gasification reactor, the gasification burner having an inlet;

a heat exchanger, the heat exchanger having an inlet;

means for supplying a flow of liquid fuels, residues and waste to said heat exchanger inlet for flow passage thereof through the heat exchanger, said heat exchanger having an outlet;

means for supplying a flow of a heating medium through said heat exchanger in a indirect contact with said fuels, residues and waste to heat said fuels, residues and waste and completely vaporize said fuels, residues and wastes to vapor form;

means for connecting the heat exchanger outlet with the gasification burner inlet so that vapor form fuels, residues and waste flow to the gasification burner; and

means for supplying a feed of gasification medium to the inlet of said gasification burner.

14. The apparatus of claim 13, in which the heating medium is a feed of steam.